

# PATENT SPECIFICATION



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## COMPLETE SPECIFICATION

### Cap-shaped Bottle Closing Device of Plastic

I, HARDY LOHRER, a citizen of the Confederation of Switzerland, of 3 Zimmermannstrasse, Wiesbaden, Germany, do hereby declare the invention, for which I  
5 pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to closures  
10 for bottles, and more specifically to a bottle closing device of plastic which engages like a cap over the projecting bead round the bottle mouth and is intended primarily for  
15 bottles or like containers containing effervescent liquids.

Cap-shaped bottle closing devices engaging over the projecting bead round the bottle mouth were hitherto preferably made from metal and have a corrugated border  
20 zone engaging under tension under the mouth-bead of the bottle, thereby closing it tightly. In order to open such closing devices a special tool is mostly required.

Cap-shaped bottle closing devices are  
25 also known, particularly for small medicine containers, which are made from a plastic such as polyethylene, and have on their periphery a small bead which engages over the bead formed on the neck of the container. To fit on the container, only a slight  
30 pressure on the upper surface of the cap is required. Such a cap-shaped closing device of plastic is, however, not suitable for bottles containing a liquid and especially  
35 a liquid charged with an effervescent gas, because it does not ensure a liquid- and gas-tight closure.

It is, therefore, the principal object of the invention to provide a cap-shaped closing  
40 device of plastic for bottles and like containers which ensures a gas-tight closure and can be used for beverages of any kind even where a cap made from metal cannot be used as it affects the taste and for  
45 hygienic reasons, for example in the case

of oil, wine, champagne and the like.

Another object of the invention is to provide a tamper-proof closing device of plastic, which ensures that, as long as it is  
50 not opened, the original contents are in the bottle and which is especially suitable, even after the bottle has been opened, of serving as a gas-tight closure on a full or partly empty bottle.

According to the invention, a cap-shaped  
55 closing device of plastic, engaging over the bottle mouth and having an inwardly directed bead engaging over the projecting bead round the bottle mouth, comprises an upper cap part and an integral lower cylindrical cap part, said lower cylindrical cap  
60 part extending on to the usual bulging portion of the bottle below the projecting bead round the bottle mouth and constructed as a tear-off strip, formed by a weakening line  
65 embossed from the outer side and offset in downward direction below the projecting bead round the bottle mouth at at least two opposite points to form lugs on the upper  
70 cap part when the strip is torn off.

The tear-off strip forms at one of its ends a tear-off tag and is preferably so designed that the transition from the tear-off strip to the tear-off tag has two weakening lines  
75 embossed from the outside and of different length and leading to opposite edges of the tear-off strip. The weakening lines on the gripping portion or handle of the tear-off tag are so designed that they automatically  
80 tear when the closing device is placed on the bottle and the closing tag projects from the device ready to grip. To enable the projecting tear-off tag to be more easily gripped and manipulated, it is provided with gripping ribs or grooves.

To open the closing device the tear-off  
85 strip serving as guarantee for the original contents of the bottle must first be removed.

To ensure that the closing device is gas-tight even after the tear-off strip has been  
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[Price 3s. 6d.]

Price 4s 6d

Price 25p

removed, for example in the case of a partly emptied bottle, the weakening lines of the tear-off strip are so designed that after the removal of the tear-off strip, two or more lugs remain on the upper cap part which still ensure the gas-tight hold of the upper cap part on the bottle. Furthermore, the weakening line of the tear-off strip is located so far below the bead of the bottle mouth that the cap bead, after the removal of the tear-off strip, engages over the bottle mouth bead and forms a gas-tight closure.

By providing one or several lateral thickened portions of material on the upper cap part the closing device can, after the strip has been torn off, be pressed off the bottle with the thumb without the aid of any tool.

In a preferred form of construction, the closing device is provided with a known stopper part projecting into the bottle neck and having a bottom surface of particular construction.

When the closing device is provided with said special stopper part projecting into the neck of the bottle as additional protection against leakage in the case of bottles and like containers containing effervescent beverages, said stopper part has a bottom surface that bulges towards the interior of the bottle. It has been found that this presents the advantage that said bulge, on being exposed to the pressure exerted by the contents of the bottle, presses the side walls of the stopper part with known radially arranged ribs against the inner wall of the bottle neck.

The space in the stopper part can be closed at the top by a possibly transparent sealing disc inserted in an annular groove which may be provided in the upper cap part. It has been found advantageous to construct said sealing disc from a material impermeable to gas, such as polystyrol, to hold back, if necessary, any gas residues which may diffuse from the interior of the bottle through the closing device made from polyethylene, for example. By this means a slight counter pressure is produced in the space and counteracts any further diffusion of gases from the interior of the bottle. It is advisable to arrange the annular groove for receiving the sealing disc so far towards the top that said disc is flush with the upper edge of the closing device.

The sealing disc may serve as carrier for printed advertising matter of all kinds.

When the closing device has been torn off, the disc can be used as counter or for collecting purposes, according to its design.

Two preferred embodiments of a bottle or the like container closing device according to the invention is illustrated diagrammatically and by way of example in the accompanying drawing, in which:

Fig. 1 is a side elevational view, partly in section, of one form of construction of a closing device with tear-off strip fitted on a bottle;

Fig. 2 is a side elevational view of the closing device after the removal of the tear-off strip with the bottle turned about its longitudinal axis through an angle of 90° as compared with Fig. 1;

Fig. 3 illustrates, on a larger scale, the shape of the separated tear-off strip;

Fig. 4 is a top plan view of the closing device, and

Fig. 5 is a cross sectional view of another form of construction of the device with inner stopper part.

As illustrated in Fig. 1, a cap-shaped closing device according to the invention consists of an upper cap part 1 and an integral lower cylindrical cap part 3. The lower cylindrical part 3 extends as far as the thickened bottle neck below the projecting mouth-bead 2 of the bottle.

A weakening line 4 of a tear-off strip 5 embossed from outside is offset in downward direction at two or more opposite points so that lugs 6 form when tearing off the strip 5. These lugs 6 enable the device to form a gas-tight closure even in the case of a partly emptied bottle.

The tear-off strip 5 has at the point where it merges into a tear-off tag or strap, two embossed weakening lines of different lengths. This enables the tear-off strip to be torn off in a perfectly reliable manner.

The end of the tear-off strip 5 is embossed so strongly into the material that only an extremely thin web is produced as connection, which web bursts open after the closing device has been pressed on to the bottle, with the result that the manipulating part or handle provided with gripping ridges projects from the bottle or rather the closing device.

The upper cap part 1 has one or more lateral thickened portions 7 which enable the cap part to be pressed off with the thumb.

To ensure a tight closure, the cap-shaped bottle closing device may be provided with a cork insertion or an insertion of synthetic or other suitable material such as frequently employed in the known metal closing caps. Even in the case of long storage a diffusion of the contents or leakage from bottle and a change in the flavour of the contents of the bottle cannot take place.

In the case of bottles filled with effervescent beverages it has likewise been found advisable to provide the closing device with a known hollow stopper part 8 depending from the upper cap part 1 and projecting into the bottle neck, as shown in Fig. 5.

This stopper part 8, which is provided with radially arranged ribs 9, has a bottom

10 bulging towards the interior of the bottle.

The space 11 in the stopper part 8 can be closed at the top by means of a disc 13 fitted in an annular groove 12.

5 The disc 13 is preferably made from a material impermeable to gas, for example polystyrol, whereas all other parts of the closing device can be of plastic synthetic resin, such as polyethylene.

10 As the closing device bears absolutely smoothly on the bottle, even in the case of long storage no dirt can collect on the edge of the device, which cannot be avoided in the case of metal caps, owing to their corrugated edge.

15 Contrary to the screw bottle closing devices, there is no danger that, when reclosing a partly emptied bottle containing effervescent beverage, an excessively high pressure forms in the bottle which causes it to burst, because the closing device according to the invention flies off under too high pressure.

20 As no special tools are required for opening the bottle closing device, the bead on the mouth of the bottles cannot become damaged so that bottles provided with this closing device are ensured a longer life.

25 The closing device according to the invention can be fitted on any bottles which are also suitable for metal caps.

30 As the closing device according to the invention does not, as in the case of metal closing devices, require that a direct heavy pressure be exerted on the bottle when mechanically fitting on the bottle, it is possible to use cheap light glass bottles, with the result that a repeated use of these light glass bottles can be dispensed with.

40 Consequently, cleaning and return transport expenses are saved.

WHAT I CLAIM IS:—

1. A cap-shaped closing device of plastic, engaging over the bottle mouth and having an inwardly directed bead engaging over the projecting bead round the bottle mouth, comprising an upper cap part and an integral lower cylindrical cap part, said lower cylindrical cap part extending on to the usual bulging portion of the bottle below the projecting bead round the bottle mouth and constructed as a tear-off strip formed by a weakening line embossed from the outer side and offset in downward direction below the projecting bead at at

least two opposite points to form lugs on the upper cap part when the strip is torn off.

2. A closing device as set forth in claim 1, wherein the weakening line of the tear-off strip is arranged so far below the bead of the bottle mouth that the inwardly directed bead on the upper cap part of the closing device still constitutes a gas-tight closure after said strip has been torn off.

3. A closing device as set forth in claim 1, wherein the transition from the tear-off strip to the tear-off tag has two weakening lines of different lengths embossed from the outer side and extending towards the edges of the tear-off strip.

4. A closing device as set forth in claim 1, wherein at the end of the tear-off strip the weakening lines are embossed so strongly in the closing device that at this point only an extremely thin connection exists between the holding portion of the tear-off tag provided with gripping ridges and the remaining portion of the closing device, which connection automatically tears open when the closing device is placed on a bottle.

5. A closing device as set forth in claim 1, wherein at least one lateral thickened portion is provided on the periphery of the upper cap part.

6. A cap-shaped closing device as set forth in claim 1, wherein a hollow stopper part depends from the upper cap part and projects into the neck of the bottle, said hollow stopper part having radially arranged ribs and a bottom part bulging towards the interior of the bottle, the hollow space within said stopper part being closed at the top by a disc of material impermeable to gas fitted in an annular groove in the stopper wall.

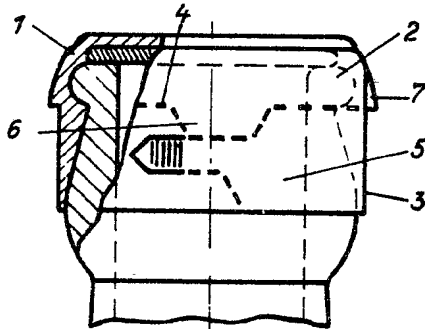
7. A closing device as set forth in claim 6, wherein the annular groove for the insertable disc is arranged at the upper boundary of the device and the disc forms the upper surface of the closing device.

8. A closing device, substantially as herein described, and substantially as shown in the accompanying drawing.

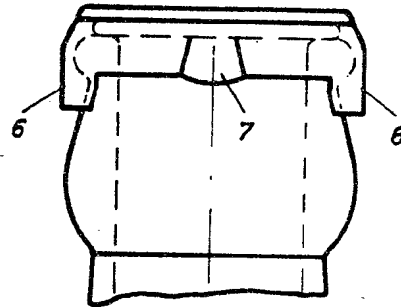
HARDY LOHRER

Per: BOULT, WADE & TENNANT,  
111/112 Hatton Garden, London, E.C.1.  
Chartered Patent Agents.

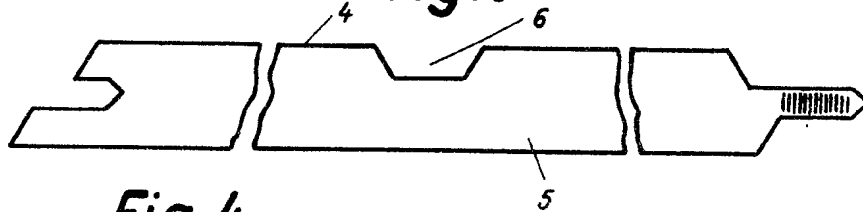
**Fig. 1**



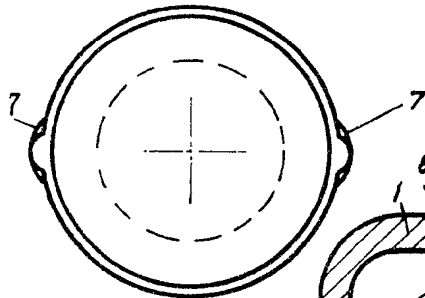
**Fig. 2**



**Fig. 3**



**Fig. 4**



**Fig. 5**

